



Fact Sheet

Recycled Uranium Initiatives

Background

In the summer of 1999, workers at the Paducah, KY, Gaseous Diffusion Plant (GDP) raised concerns about recycled uranium handled over the course of the plant's operations. In response, the Department of Energy (DOE) took five actions:

- Expanded medical surveillance of current and former workers.
- Investigated environment, safety and health (ES&H) concerns at GDPs at Paducah, Portsmouth, OH, and Oak Ridge, TN.
- Supported an assessment of worker exposure to radioactive materials at the Paducah GDP.
- Reviewed options for compensating workers for occupational illness.
- Initiated DOE-wide studies of recycled uranium.

DOE is now releasing the initial studies on recycled uranium. The completion of the first four actions above was reported previously.

Historical Perspective

In 1949, the United States was heavily dependent on foreign uranium supplies, and uranium was critical to national security. The Atomic Energy Commission—a precursor to DOE—decided that chemical separation plants (first at Hanford, WA, then Savannah River, SC, Idaho, and the commercial West Valley, OH, plant) should recover uranium from spent nuclear fuel to eliminate the foreign uranium dependence. Most recycled uranium was shipped from the separation plants to the Paducah GDP. It was also shipped to the Portsmouth and Oak Ridge GDPs, and to other processing sites within DOE, and used to make fresh nuclear fuel and target materials for reactors, nuclear weapons components, military tank armor and armor piercing penetrators.

Recycled uranium is slightly more radioactive than mined uranium because it has been irradiated in a nuclear reactor. It contains traces of plutonium

and other radioactive isotopes (such as neptunium and technetium) that are not completely removed by the chemical separation plant processes.

Recycled Uranium Project

In September 1999, DOE-wide studies of recycled uranium flow began, including development of an inter-site summary report for public release. The studies focused on the recycled uranium production sites—Hanford, Savannah River, Idaho, and the commercial West Valley Plant—and processing sites at the Paducah, Portsmouth, and Oak Ridge GDPs; Fernald, including Reactive Metals, Inc., Weldon Springs, and West Valley; Rocky Flats; and Oak Ridge Y-12. Thousands of records were retrieved and analyzed.

The flow of recycled uranium among DOE sites was extremely complex. The processing sites interchanged recycled uranium among themselves, and frequently and deliberately blended recycled uranium into mined uranium, which increased the total amount of recycled uranium. Historically, there was no designated “recycled uranium” category in DOE records. Because of differing operational practices, five different designations for recycled uranium were used by the sites. Use of these differing designations, and the extensive blending operations, resulted in data inconsistencies among sites. Also, data on plutonium, neptunium, and technetium levels are incomplete. For these reasons, an inter-site recycled uranium mass flow analysis could not be prepared at this time as originally intended.

The nine site reports are available at <http://tis.eh.doe.gov/legacy/>, and each include a site-specific estimate of mass balance for recycled uranium. The reports provide a general understanding of the flow and characteristics of recycled uranium at individual sites. They identify locations where recycled uranium could have

concentrations. This information may be useful in identifying personnel exposure or environmental implications. The reports also discuss the potential for worker exposure, but the methodology used is subjective and does not factor in engineering controls, protective measures, or exposure monitoring.

The Department recognizes the importance of resolving the data inconsistencies in the current site reports. The Office of Plutonium, Uranium, and Special Materials Inventory has been charged with constructing a historical mass flow for uranium, to include recycled uranium, for the primary recycled uranium sites. The nine recycled uranium site reports will be used in the study. This new effort may take several years to complete, but should yield a more complete understanding of recycled uranium in DOE.

Expanded Medical Surveillance

As a result of health concerns at the GDPs, an ongoing medical surveillance program—which evaluated the health of former workers at risk of disease resulting from hazardous workplace exposures—was expanded in 1999 to include both current and former workers at the GDPs. The program currently is managed by a consortium of unions and universities and is now underway at 10 sites. Medical exams for 4,500 former DOE workers have been completed to date, and the program will be expanded to other sites in the upcoming year. The program at the GDPs also includes special screening for lung cancer.

Investigations of ES&H Concerns

Beginning in 1999, DOE conducted comprehensive investigations to examine historic ES&H practices at the GDPs, including protection for workers exposed to recycled uranium. The scope of the investigations was nearly unprecedented—over 1000 workers and managers were interviewed; tens of thousands of records examined, and dozens of soil and water samples analyzed. The investigations revealed that a climate of secrecy and urgency to produce nuclear weapons often took precedence over ES&H. Partly as a result of these investigations, the government acknowledged for the first time that workers who became ill because of these past safety practices should be compensated. The results of the

investigations are available on the Internet at <http://www.eh.doe.gov/oversight>.

Paducah GDP Exposure Assessment

DOE conducted a study of Paducah GDP workers to determine if they may have had increased potential for radiation exposure, the locations and processes where increased exposure may have occurred, and estimates of exposure. DOE estimates that 2,500 to 4,000 workers worked in areas considered "moderate" to "high" for increased internal and external radiation exposures. Protective equipment was not always properly used. There were reports that contamination found on worker's personal clothing was above release limits. The January 2001 report, *Exposure Assessment Project at the Paducah Gaseous Diffusion Plant*, is available at <http://www.eh.doe.gov>.

Occupational Illness Compensation

When concerns from Paducah arose in 1999, DOE committed to look at how workers who were made ill from occupational illnesses could be compensated. Based on the ES&H investigations and the other efforts discussed above, Congress passed landmark legislation (the Energy Employees Occupational Illness Compensation Program Act of 2000) that created a \$1.6 billion entitlement program to help workers who develop certain cancers and lung diseases. Because of the lack of reliable exposure data, workers at the GDPs do not have to demonstrate exposure to specific radiation doses in order to receive benefits. A new DOE Advocacy Office provides information and assistance to workers in filing federal compensation claims or state claims for illnesses not covered under the federal program.

With the Advocacy Office, expanded medical monitoring, and illness compensation legislation in place, DOE has begun the process of ensuring that workers who developed illness while working to build America's nuclear defense get the treatment they have long deserved.

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